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FIRST DIRECTORY OF
NEVADA
TERRITORY

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CONTAINING:
THE NAMES OF RESIDENTS IN THE
PRINCIPAL TOWNS; A HISTORICAL SKETCH;
THE ORGANIC ACT, AND OTHER POLITICAL MATTERS
OF INTEREST; TOGETHER WITH A DESCRIPTION
OF ALL THE QUARTZ MILLS; REDUCTION WORKS,
AND ALL OTHER INDUSTRIAL ESTABLISHMENTS
IN THE TERRITORY; AS ALSO OF THE LEADING
MINING CLAIMS; AND VARIOUS MINERAL DISCOVERIES,
WORKS OF INTERNAL IMPROVEMENTS, ETC.,
WITH A TABLE OF DISTANCES, LIST OF PUBLIC OFFICERS,
AND OTHER USEFUL INFORMATION.

COMPILED FROM THE MOST RECENT
AND AUTHENTIC SOURCES;
by J. WELLS KELLY

AND INCLUDING
SKETCHES OF THE WASHOE
SILVER MINES
by HENRY DE GROOT

Nevada
Coll.

INTRODUCTION
by RICHARD LINGENFELTER

THE TALISMAN PRESS
Los Gatos, California 1962

about the mine; seven tons of rock are worked daily, and the product of the mine since being opened is about one hundred and fifty thousand dollars. "The Veatch Process," an improvement on the Freyburg, being both cheaper and more effectual, is used in this establishment, under direction of Mr. Andrew Veatch.

GOULD AND CURRY MILL. The mill of this company is located about two miles northeast of Virginia City, on an inclosed flat of sixty acres, and with its numerous out-buildings and houses for workmen, presents the appearance of a small town. The main edifice, in the shape of a cross, is two hundred and fifty feet long, with wings seventy-five feet each, being the largest building in the Territory. It is divided into compartments,—that for the work of amalgamating under the charge of Capt. S. Tyler, being eighty-seven and one half feet deep and fifty feet wide, two stories high. The center of the building, occupied by the batteries, is one hundred and twenty-five by fifty feet, and contains eight batteries of five stamps each, capable of crushing forty tons of ore per day. The engine of one hundred and fifty-horse power, and very perfect workmanship, is from the Pacific Foundry, San Francisco. There are six furnaces and three boilers, the latter twenty-six feet long and forty-two inches diameter, with fourteen-inch flues. The engine room is of the same size as the amalgamating department. The mill, under superintendence of R. G. Carlyle, employs sixty men, working by relay night and day. The ore house and drying department is one hundred by eighty feet. A feature of this establishment is the perfectness that marks it in every department and operation, and the great economy of labor secured thereby. It not only exceeds in capacity any other quartz mill in the Territory, and perhaps in the world, but also surpasses all others in the completeness of its parts. The Veatch Process is employed. The mining operations are under the efficient and very successful management of Mr. C. L. Strong.

OGDEN & WILSON Co.'s MILL.—This mill, situated about one quarter of a mile below the town, was put up by George

L. Fuller for the Company in November, 1860, being the first mill completed in the District. The main building is forty by eighty feet, with an extensive shed having a chute for conveying the rock to the batteries. An engine of twenty horse power drives eighteen stamps, crushing twelve tons of rock per day. The rock, after being crushed, is carried by elevators to the second story, where it is bolted into a receiver, and thence conveyed to the amalgamators on the lower floor, an arrangement that saves much manual labor. The erection of this mill, with the necessary adjuncts, cost about forty thousand dollars.

A small mill located near and constructed upon the same plan as Ogden & Wilson's, and intended for custom work, was erected shortly after the latter. The building is twenty-six by forty feet, and has six stamps, propelled by a twelve horse power engine. The establishment cost about twenty thousand dollars, employs six hands, and is under the superintendence of J. T. Brown.

THE CEDAR HILL MILL, owned by Patterson & Land, is situated on Cedar Ravine, one mile west of Virginia. It employs eight men; has four straight batteries, four stamps each, and crushes twenty tons, running night and day. The engine, forty horse power, comes from the Pacific Foundry, San Francisco. In the amalgamating department there are eight Knox's Improved Pans. The Jeffrey process is used. This mill does custom work, and cost about thirty-five thousand dollars.

THE MARIPOSA QUARTZ MILL—Goodman & Hubbell, proprietors—is located at the foot of Cedar Hill. It is propelled by a fifteen horse power steam-engine, driving twelve stamps of six hundred pounds each, and crushing fifteen tons of rock per day. Knox's pans and the Hungarian Bowls are used in the amalgamating department, the pulp being also subjected to a steaming process, as heretofore practiced by the proprietors. Cost of mill about twenty thousand dollars.

THE EMPIRE MILL, a short distance east of the town—O. F. Griffin, Mark Sheldon and W. H. Graves, proprietors—runs

sixteen stamps, driven by a powerful steam-engine, crushing twenty tons of rock per twenty-four hours. This company purchase their ore, employ twenty hands, and use the Veatch Process, Wakelee's pans. Cost of mill, forty thousand dollars. W. H. Graves, Superintendent; W. T. Stephens, engineer; W. H. Bevins, foreman. The company are building a new road to their mill; and intend soon to double its crushing capacity, as they have sufficient propelling power to do so.

Three quartz mills are in course of construction in Seven Mile Cañon, within the limits of Virginia District. Of one of these, Booth & Co., formerly of Eureka, Nevada County, are proprietors. Of another, Patterson & Co. are proprietors. This is a large sized mill and nearly completed. The entire cost of these mills will be between seventy-five and one hundred thousand dollars. Their aggregate capacity will be about fifty horse power.

FLOWERY DISTRICT.

This District, lying east and adjoining the Virginia Mining District, was laid out in the fall of '59, a great many good-looking ledges having been found there, several of which have since been opened and proved to be rich in gold and silver. Many of the claims at first taken up were afterwards abandoned as worthless; of those retained and prospected to a greater or less extent we may name the Lady Bryan, Rogers, Monte Cristo, Utah, Norman, Cherokee, Harrison, Flowery, Adriatic, Union, Aurora Borealis, Uncle Sam, Desert, Anglo Saxon, Humboldt, St. Johns, and Mammoth. The recent census showed this district to contain three hundred and thirty-nine inhabitants, a number that has since been largely increased. Running entirely across it is Six Mile Cañon, a deep ravine, through which, since the opening of the tunnels at Virginia, several hundred inches of water flow constantly. This water has led to the building of a number of steam quartz mills, and two or three others driven by water, which, besides enhancing the value of the mines, by giving employment to a great many hands, have caused a small town, called Flowery City, to spring up at a point about half way down the cañon. It is a smart

little place, as indeed the whole ravine is an active and bustling locality, both by means of the numerous mills along it, and the fine road leading from Virginia to Carson River, and the Butte or Whitman Coal Fields, extending its entire length.

Quartz Mills.

The following are the quartz mills now in operation in this District:

SUNCOOK MILL—A. Bassett & Co., owners—located a short distance below the Gould & Curry Mill; building fifty feet by forty; four straight batteries, sixteen stamps, driven by a thirty horse power engine, from Pacific Works, San Francisco; crush twenty-four tons every twenty-four hours; employ ten men and use sixteen Varney pans for amalgamating. A. Bassett, superintendent; S. Kellogg, engineer.

WINFIELD MILL—L. A. Booth, proprietor. This is a steam mill, being driven by a forty horse power engine, intended to run twenty stamps, though but eight are now in use, and to crush twenty tons of rock per day. In amalgamating, forty Bertola pans are used. Seven men are employed. John Leavitt, superintendent; M. L. Remington, engineer.

EMPIRE STATE MILL—R. M. Billett & Co., proprietors—situated at foot of Sugar Loaf Peak. Both water and steam are used for propelling this mill, either being available for that purpose. The water-wheel is forty feet in diameter, and the engine of twenty horse power. The mill employs eight hands, runs ten stamps, and crushes twelve tons per day. The company purchase ore or crush rock for customers. They use Knox's amalgamators and Howland's patent flues.

SUGAR LOAF MILL—Rafael Cardenas, José Ma Ruiz, and Francisco Llaguna, proprietors—near Sugar Loaf Peak; driven by water falling on an overshot wheel and generating about a twenty horse power. The mill has four stamps, employs three men, and uses what is known as the Mexican process in amalgamating the ores. It has thus far been successful in its operation, and is soon to be enlarged, as the power is sufficient to carry eight or ten stamps.

THE FLOWERY MILL, three miles east of Virginia, is driven by a forty horse power steam engine, made at the Vulcan Works, San Francisco. It runs but eight stamps, crushing twelve tons at present, though its crushing apparatus will be extended to its full capacity as occasion may require. This mill is erected for custom work, runs night and day, and employs twenty men, and uses Dr. Veatch's Process. A. C. Austin, superintendent.

THE BERTOLA MILL, No. 2, is situated at the junction of the Flowery Toll-road and Desert Cañon; water power, with wheel forty-two feet in diameter. Has ten stamps and thirty amalgamating pans of the Bertola patent—to be increased to sixty; employs ten hands, runs day and night, and crushes ten tons of rock per twenty-four hours. L. B. Brooks, superintendent.

THE OLIVE BRANCH MILL, driven by a thirty horse power steam engine, crushes about twenty-four tons of rock per day. It runs sixteen stamps and thirty-two of Knox's amalgamators. The building covering this mill is seventy-two feet long and sixty wide. Connected with the establishment is a laboratory for testing ores. It does custom work, employs twelve men, and runs night and day. Israel W. Knox, superintendent.

IN THE CASTLE DISTRICT, north of Virginia, a number of ledges have been located, and samples of rock have been found that assay from fifty to two hundred dollars a ton in gold and silver. A considerable amount of work has been done on the Monticello, Alliance, St. Valentine, Northern Light, Pine Tree, and several other ledges.

VIRGINIA CITY.

A011022

RESIDENTS OF VIRGINIA CITY.

ABBREVIATIONS.

bds.....boards. nr.....near. res.....resides. op.....opposite.

A

ABBOTT Louis, at Fashion Stables
 Abershaw Isaac, miner, bds Union Hotel
 Ackerson A. J. millwright, Gould & Curry Mill
 ADAMS GROVE (Mitchell & Adams) liquors, W side C near Taylor
 Adams William, clerk with Mitchell & Adams
 Ahern C. R. assistant engineer, Gould & Curry Mill
 Alberts Wilhelm, laborer, bds Wylie's Hotel
 Allard Joseph, amalgamator, Olive Branch Mill
 Allbaugh Adam (Wallin Co.) lumberman, 17 miles NW of Virginia
 Allbaugh William (Wallin Co.) lumberman, 17 miles NW of Virginia
 Allen A. P., Sierra Saloon, W side A op Sutton Avenue
 Allen William, stock broker, res W side D near Mill
 Allers William, cook, Barnum's Restaurant
 ALMACK'S (J. Loryea and J. Stowe, proprs) SE cor C and Taylor
 Alvarez Florentino, miner, W side B near Cedar Hill
 Alvarez Jesus, miner, W side B near Mill Street
 Amador Juan N. miner, W side B near Cedar Hill
 AMES EDWARD T. lumber, Toll-Road between Gold Hill and Virginia
 Anderson Charles, miner, Flowery District
 Anderson James, miner, bds Hickey's, W side C nr junction B
 Anderson J. M. res W side B near Sutton Avenue
 ANDERSON & LANSING, attorneys-at-law, B next Fashion Saloon
 Anderson Thomas, carpenter, Ophir Claim
 ANDERSON W. F. attorney-at-law, W side B near Sutton Avenue
 Andrews A. J. miner, bds Union Hotel
 Andrews J. R. painter, bds Merchants' Exchange
 ANDREWS T. J. under Sheriff, W side B near Taylor
 Andrews William T. carpenter, bds Union Hotel
 Anejani Peter, E side C near Mill
 Antoni John, stone-mason, Gould & Curry Mill
 Appach Adolph, barkeeper, Old Corner Saloon
 Arick Rufus E. clerk, res Recorder's Office

SECOND DIRECTORY
OF
NEVADA TERRITORY;

EMBRACING A

GENERAL DIRECTORY OF RESIDENTS

OF ALL THE PRINCIPAL TOWNS;

BUSINESS DIRECTORY OF ADVERTISERS;

QUARTZ MILLS, REDUCTION WORKS, TOLL ROADS, ETC.;

OFFICERS OF THE MASONIC, ODD FELLOWS AND SONS OF TEM-
PERANCE ASSOCIATIONS; MEMBERS WASHOE STOCK BOARD
OF EXCHANGE; FIRE DEPARTMENT;

INCORPORATION ACTS OF VIRGINIA AND GOLD HILL;

AND ALL OTHER INFORMATION CONNECTED WITH THE PROGRESS AND PRESENT
CONDITION OF THE TERRITORY;

ALSO,

AN ACCURATE TABLE OF DISTANCES; LIST OF PUBLIC OFFICERS; AND
PRINCIPAL MINING LAWS OF DIFFERENT DISTRICTS; WITH
THE RESIDENTS AND PRINCIPAL MINES, MILLS,
ETC. OF THE

REESE RIVER REGION.

COMPILED FROM THE MOST RECENT AND AUTHENTIC SOURCES,

BY J. WELLS KELLY.

VIRGINIA: A008097

1863.

Printed by Valentino & Co., 517 Clay and 514 Commercial Streets, San Francisco.

O'FARRELL MILL, published last year as the Ogden & Wilson. It was put up by George L. Fuller for that company, in November, 1860, being the first mill completed in the district. The main building is forty by eighty feet, with an extension shed having a chute for conveying the rock to the batteries. An engine of twenty-horse power drives eighteen stamps, crushing twelve tons of rock per day. The erection of this mill, with the necessary adjuncts, cost about forty thousand dollars.

To the right of the above, about fifty yards, is a small mill of six stamps, propelled by a twelve-horse power engine. In connection with this mill there are five acres of land. Both establishments are owned by Mr. William O'Connor.

EMPIRE MILL AND MINING CO.—This extensive establishment is situated a short distance below the O'Farrell, on Mill Street; cost of mill, over one hundred thousand dollars. The land about the mill, owned by the company, amounts to twenty acres, and being located immediately within the most improving portion of Virginia, is far more valuable than any other in the county. The building, a very large and substantial one, fronts upon the street, and in the rear, where the batteries are situated, and the ore delivered, the company have built a splendid road, crossing the cañon about one hundred yards above their office, which is a very neat and comfortable building. Having thus two entrances, no delay is occasioned by the waiting of teams, and everything goes on systematically. The company have two wood ranches, a short distance from Virginia, and owning the teams engaged in hauling quartz and wood, save to the stockholders a very considerable sum in the course of the year. The mill has sixteen stamps, and crushes thirty tons of rock per day. In the amalgamating department there are thirty-seven of Wakelee's patent improved pans, with steam chambers, working for both gold and silver. The mine belonging to this company is very valuable, they owning seventy-five feet of the celebrated Gold Hill proper; and in connection with the mine we must mention the fact of their being the only company who have yet struck the "front ledge" in the hill, although all the other companies are running in

tunnels for the same purpose. From specimens of the rock exhibited to us, we have no hesitation in saying it is a mine of almost fabulous richness. Owners of a mine immensely prolific, with such an extensive mill in close proximity, out of debt, and able to supply other mills than their own with their rich ores, this company would seem to be in the best possible condition for effecting advantageous sales of their property, if such be their purpose, or carry on their operations with eminent success. Employ in mine and mill nearly one hundred hands. Mr. R. N. Graves, Superintendent.

GOULD & CURRY MILL.—The works of this company occupy one of the most beautiful sites in the Territory; located one mile east of Virginia, on an inclosed piece of land, comprising sixty acres. This spot, selected with wise foresight, is peculiarly adapted, with its many natural advantages, to the reduction of gold and silver bearing ores. The grounds adjoining and surrounding the works are kept in a neat and orderly manner, an end easily attainable from the gentle slope of the land, combined with a perfect system of drainage. A noticeable feature, as elsewhere, around and in this establishment, is the abundant supply of water. This is obtained from reservoirs situated high up on the mountains, each side of the works. Prominent among the many buildings with which the grounds of this company are diversified, stand the Mill and Ore House. The latter building over one hundred by eighty feet, and forms quite a feature in the general plan. Here the ores from the mines are received, and after a careful drying, an operation performed by two kilns, each forty feet in length, they are taken to the mill in a car running over a track some fifteen feet from the ground. Between this building and the main works, there is a fall of ten feet; the division of the upper and lower grounds being made by an immense wall of stone, built with an evident eye to beauty as well as utility. The mill, or main edifice, is an imposing structure, of noble design, in the form of a cross, and is two hundred and twenty-five feet long, with wings eighty-seven and a half feet each, being the largest building in the Territory. Immediately over the center of each of the four wings, are placed ventilators, which

greatly conduce to the pleasantness of the interior. The inner works are divided into three compartments—the engine, crushing, and amalgamating departments. In the former are the engine and boilers, from which the whole power used in the works is obtained. The engine, a beautiful and perfect piece of workmanship, is from the Pacific Foundry, San Francisco. It is one hundred and fifty horse power. The boilers, three in number, are each twenty-six feet long, forty-two inches in diameter, with double flues fourteen inches. They are inclosed in furnaces built of a peculiar fire-stone found near the works. Directly under the main floor of the engine room are the fire and air pumps. The center of the building comprising the crushing department, is three stories high, running at right angles with the engine and amalgamating rooms. It is one hundred and twenty-five by fifty feet, and contains eight batteries of five stamps each, capable of perfectly crushing thirty tons per day. The drawback heretofore in dry crushing works—the suffocating clouds of dust arising from under the stamps—is here pleasantly avoided by the use of two powerful suction fans. In front of the batteries are four hopper-shaped bins, each holding about ten tons; into these the ore from the ore house is conveyed, and is delivered by its own gravity into the hands of the feeders. On the second floor, directly over the batteries, are situated the fine ore bins, four in number, with a capacity of twenty tons each. Into these the crushed ore, after being elevated and put through a peculiar sieving process, is deposited. Above these again, on the third floor, are ten more bins, for the reception of the dust taken from the batteries. This department is isolated, as it were, being separated from the engine and amalgamating rooms by brick walls rising from the foundations to the roof. The amalgamating room is eighty-seven and one-half by fifty feet, three stories high, and is justly admired as a model of arrangement, convenience, and regularity. The process employed in this establishment—invented and put in practical working by Capt. S. Tyler—is one not heretofore used, and is of undoubted merit and practicability. In this department, as in every part of these works, all the operations are conducted with system and skill. The ores to be treated, after a careful sampling and

weighing, are conveyed in cars, and deposited in seven large pans, on the upper or preparing floor; from thence, it descends to the middle, or amalgamating floor, where it is received in eight large tubs, with a capacity of ten tons each. On this floor, the amalgamation of the ores is completed, and by an easy transition descends to the first or finishing floor, on which are situated eight settling tubs, and twelve pans for washing up. Here the amalgam is received, and having been parted from its excess of mercury by hydraulic pressure, a method peculiar to this establishment, it is conveyed to the smelting house. In this building are situated the assay room, roasting, smelting, and retort furnaces. Here the amalgam, having passed through the successive stages of retorting, smelting, and assaying, is stamped and shipped to San Francisco. It is contemplated to increase this immense establishment to two-fold its present capacity. These works, as also the valuable mine belonging to this company, are under the efficient and successful management of Mr. Charles L. Strong.

Turning up Seven Mile Cañon, and into Cedar Ravine, we meet with the

WINFIELD MILL AND MINING Co.—Messrs. L. A. Booth and John Leavitt, proprietors. Has eight very heavy stamps, one thousand pounds each, crushing twenty tons per day. The proprietors intend shortly to still further increase its capacity by adding another ten stamp battery. Forty pans with steam chambers, and ten wooden tubs, comprise the amalgamating department. This company intend making the experiment of conducting the surplus steam from the escape pipe into the amalgamating tubs, thus saving fuel. The engine, a very fine one, of forty-five horse power, is from the Pacific Foundry, San Francisco. The pans are from the Iron Works of Goss & Lambard, Sacramento. This company is generally employed crushing rock from their own claim at Gold Hill, and work for both gold and silver. Twelve men are employed night and day. John Leavitt, Superintendent.

SUNCOOK MILL.—A. Bassett & Co. owners—located in Cedar Ravine, a short distance above the Winfield Mill. Built in

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1861, and is one of the most fortunate in the Territory, having been constantly running since it was constructed. This company crush their own rock, and also do custom work. Has twelve stamps, driven by a splendid engine of thirty horse power, from the Pacific Works of San Francisco, and crushes eighteen tons of ore every twenty-four hours. Employ eight men, and use fifteen six-foot tubs for amalgamating, working for both gold and silver. A. Bassett, Superintendent.

CEDAR HILL MILL, Messrs. C. B. & Chas. Land, proprietors, is situated on Cedar Ravine, one mile west of Virginia. It employs ten men, has three straight batteries of four stamps each, and crushes sixteen tons, running night and day. The engine, forty horse power, comes from the Pacific Foundry, San Francisco. In the amalgamating department there are twelve six-foot tubs, and eight Knox's improved pans. This mill does custom work and cost about thirty-five thousand dollars. The owners being enterprising business men, keep their mill constantly employed, and supervise the concern themselves.

THE MARIPOSA QUARTZ MILL, is located at the foot of Cedar Hill; it is propelled by a fifteen-horse power steam engine, driving twelve stamps of six hundred pounds each, and crushing fifteen tons of rock per day. Knox's pans and the Hungarian bowls are used for amalgamating, the pulp being also subjected to a steaming process, as heretofore practiced by the proprietors. Cost of mill about twenty thousand dollars.

FLOWERY DISTRICT.

This District, lying east of and adjoining the Virginia Mining District, was laid out in the fall of '59, a great many good looking ledges having been found there, several of which have since been opened and proved to be rich in gold and silver. Many of the claims at first taken up were afterwards abandoned as worthless; of those retained and prospected to a greater or less extent we may name the Lady Bryan, Rogers, Monto Cristo, Utah, Norman, Cherokee, Harrison, Flowery, Adriatic, Union, Aurora Borealis, Uncle Sam, Desert, Angle

Saxon, Humboldt, St. Johns, and Mammoth. The census of 1861 showed this district to contain three hundred and thirty nine inhabitants, a number that has since been largely increased. Running entirely across it is Six Mile Cañon, a deep ravine, through which, since the opening of the tunnels at Virginia, several hundred inches of water flow constantly. This water has led to the building of a number of steam quartz mills, and two or three others driven by water, which, besides enhancing the value of the mines, by giving employment to a great many hands, have caused a small town, called Flowery City, to spring up at a point about half way down the cañon. It is a smart little place, as indeed the whole ravine is an active and bustling locality, both by means of the numerous mills along it, and the fine road leading from Virginia to Carson River, and the Butte or Whitman Coal Fields, extending its entire length.

Following down the cañon from the Gould & Curry Mill, we have in this district the following mills now in active operation:

SUGAR LOAF MILL, owned by Martin Rancho, near Sugar Loaf Peak; driven by water falling on an overshot wheel, and generating about a twenty horse power. The mill has four stamps and two arastras, exclusively employed working rock from the St. John Claim in Silver Star District, and has thus far been successful in its operation. It will soon be enlarged, as the power is sufficient to carry eight or ten stamps. Employs three men, and uses what is known as the Mexican Process in amalgamating the ores.

EMPIRE STATE MILL.—Chas. Coover and L. Dunn, proprietors—situated at foot of Sugar Loaf Peak. Both water and steam are used for propelling this mill, either being available for that purpose. The water-wheel is forty feet in diameter, and the engine of fifteen-horse power. The mill employs eight hands, runs ten stamps, and crushes twelve tons per day. The company crush their own rock from Gold Hill. Use Knox's pans, with false bottoms, and Wakelee's patent flue pans, for amalgamating. Lathrop Dunn, Superintendent.

ROGERS SILVER MINING Co., on Flowery Road, 3 miles east

of Virginia. Has a thirty-horse power steam engine, driving two straight double stemmed and square batteries—eight stamps—crushing fourteen tons per day. Company crush their own rock from the Rogers Claim, in Flowery District. Have nine six-foot wooden tubs, and one Knox's improved patent pan in the amalgamating department. Work for both gold and silver. Employ twenty-two men in mill and mine. W. Buncher, Superintendent.

THE FLOWERY MILL, three miles east of Virginia, is driven by a forty horse power steam engine, made at the Vulcan Works, San Francisco. It runs but eight stamps, crushing twelve tons at present, though its crushing apparatus will be extended to its full capacity as occasion may require. This mill is erected for custom work, runs night and day, and employs twenty men, and uses Dr. Veatch's Process.

THE BERTOLA MILL, No. 2, is situated at the junction of the Flowery Toll Road and Desert Cañon; water power, with wheel forty-two feet in diameter. Has ten stamps and thirty amalgamating pans of the Bertola patent—to be increased to sixty; employs ten hands, runs day and night, and crushes ten tons of rock per twenty-four hours.

THE OLIVE BRANCH MILL—the largest in the district—is situated immediately in the town of Flowery. Built in 1861. It is driven by a thirty-horse power steam engine from the Miners' Foundry, and crushes about twenty-four tons of rock per day. Has sixteen stamps, and uses thirty-two of Knox's Amalgamators, with Palmer's steam-chest attached. Works for both gold and silver. The building covering this mill is seventy-two feet long and sixty wide. Connected with the establishment is a laboratory for testing ores. This company purchase rock, and also crush for customers. Employ twelve men, and run night and day (Sundays excepted). Charles H. Knox, Superintendent.

There is also a small mill, with two arastras, driven by water power, about two miles below Flowery, and owned by W. H. Frink.

VIRGINIA CITY.

This is the commercial metropolis of Nevada Territory. Situated in the midst of the richest mining region ever known, either in this or any other country, convenient of access from all points of the compass, and, besides its mineral treasures, surrounded by a country which presents lands of the best quality for cultivation and stock raising, this thriving town has risen in a few years from an uninhabited and apparently barren locality of rocky hills and verdureless ledges into a city of thousands of busy, bustling tenants, exhibiting all the comfort and home-like appearance of some antiquated metropolis. It boasts two morning newspapers and one evening, of respectable dimensions, five churches, Masonic, Odd Fellows, and Sons of Temperance institutions, the names of whose lodges and the list of whose officers appear in another portion of this work; schools and seminaries of learning of no ordinary standing, extensive libraries, daily lines of stages running from various points, among which Billy Wilson's line from Carson to Virginia, McCue's line over the mountains, and Sam. Russell & Co.'s Dayton Line, stand pre-eminent for polite and courteous attention and rapidity of travel, connecting with others from all parts of the Territory, and constantly crowded with passengers. The macadamized Toll Roads of Geiger on the north, and the Virginia and Gold Hill Tunnel Company on the south, besides many other improvements and luxuries of a character which remind one more of a city some fifty or a hundred years old than one of two years' growth. We may further observe of this, the largest and most important town in the Territory, that while its situation at the mouth of the most prolific mines in the world, gives it great local advantages, its progress and prosperity have been greatly promoted by the energy and business tact of the inhabitants themselves. Located against the side of an arid and barren mountain, its position, saving proximity to the silver mines, was the most unpropitious possible. Yet, on this site so unfavorable, within a little more than two years from the time it was founded, has sprung up a city abounding with large and substantial fire-proof buildings, a multitude of comfortable houses, and a great number of costly mills and reduction works, while through its streets water flows in abundance, and luxurious

Descriptive & Mining
Historical Society

MERCANTILE GUIDE

AND

DIRECTORY

FOR

Virginia City, Gold Hill, Silver City

AND

AMERICAN CITY,

COMPRISING

A General Business and Resident Directory
for those Cities, with Sketches of
their growth, development
and resources.

ALSO CONTAINING

Valuable Historical and Statistical Matter
OF UNUSUAL INTEREST,

TOGETHER WITH THE ONLY

ACCURATE MINING DIRECTORY

YET PUBLISHED,

*Giving the name of the Mine, number of feet in each
claim, the District in which the same is located,
and the names of Secretaries, with their
respective places of business.*

COMPILED BY

CHARLES COLLINS.

VIRGINIA:
1884-5.

PRINTED BY LENTY & DENTON, BOOK AND JOB PRINTERS, 511 SANBORN STREET, S. F.

A008000

Territorial--County and City Officials.

Below will be found a list of the various Federal, County and City Officials; likewise the names of heads of Fire Department of Virginia.

Capital of the Territory—Carson.

SUPREME COURT—George Turner, Chief Justice; Jno. W. North, Associate Justice; Powhattan B. Locke, Associate Justice; Alfred Helm, Clerk.

TERRITORIAL OFFICERS—Jas. W. Nye, Governor and Superintendent of Indian Affairs; Orion Clemens, Secretary; J. T. Lockhart, Indian Agent; W. W. Ross, Auditor; Jno. H. Kinkead, Treasurer; A. F. White, Superintendent of Public Instruction; Robert Howland, Warden of Territorial Prison.

U. S. REVENUE OFFICERS—Warren Wasson, Assessor, Carson; James S. Dilley, Collector, Virginia.

U. S. LAND OFFICERS—Clement T. Rice, Register, Carson; C. N. Noteware, Receiver, Carson.

U. S. MILITARY—J. L. Van Bokkelen, Provost Marshal General.

MILITIA OFFICERS—J. W. Nye, Commander-in-Chief; J. L. Van Bokkelen, Major-General, at Virginia; Almon Hovey, Brig. General 1st Brigade, at Virginia; Jas. McLean, Brig.-General 2d Brigade, at Genoa; H. P. Russell, Adjutant General, at Carson.

FIRST JUDICIAL DISTRICT—Comprising Storey, Washoe and Roop counties—John W. North, Judge; George King, Clerk, at Virginia; J. S. Bowker, Deputy Clerk, at Washoe City.

COUNTY OFFICIALS—Leonard W. Ferris, Probate Judge; Wm. H. Howard, Sheriff; N. W. Winton, County Clerk, ex-officio County Auditor, Clerk Probate Court, and Clerk of the Board of County Commissioners; Chas. H. Fish, Recorder; Lloyd Frizell, Assessor; John Easterling, Tax Collector; Isaac E. James, Surveyor; Dighton Corson, Prosecuting Attorney; H. H. Flagg, Martin White, and Chas. H. Knox, Board of County Commissioners.

TOWNSHIP OFFICERS—*Gold Hill Precinct*—S. A. Kellogg, Justice of the Peace; Wm. H. Beegan, Constable. *Virginia Precinct*—J. E. Atwill, Justice of the Peace; J. V. B. Perry, Constable.

CITY OFFICIALS—Rufus E. Arick, Mayor. [*Common Council*—Meet every Tuesday evening—First Ward, John Earl, J. A. Cramer; Second Ward, Geo. H. Shaw, Jas. Brennan; Third Ward, Pembroke Murray, Alex. Coryell; Fourth Ward, Thos. Parker, R. A. Young.] Geo. F. Vosburg, City Clerk; F. Walters, City Treasurer; Chas. R. Edwards, Assessor; H. K.

HODGE & WOOD, Wholesale Stationers, 418 & 420 Clay St., S. F.

Alexander, Tax Collector; C. P. Johnson, Surveyor; John Allman, Street Commissioner; Frank Tilford, City Attorney.

CITY POLICE, ETC.—Wm. H. Davenport, Recorder; Chas. W. Cooke, Marshal and Chief of Police; E. F. Clarkson, Captain of Police; City Jailor, M. J. Purcell. *Regular Police*—H. W. Ward, John Brinton, Thomas Buckley, Wm. McIntosh, Thomas Bulger, Thos. McGee, Denis Hays, B. J. Lynch, Thos. Green, — Dale, — Clancy, Frank Soule, E. F. Hawks, — Wilcoxon. City Marshal is Chief of Police.

Quartz Mills and Holsting Works.

GOULD & CURRY MILL AND MINE, situated about one and a half mile east of Virginia City. This is the most extensive mill in the Territory, or perhaps in the world. The mill, at present, runs eighty stamps. It is estimated that this company extract from their ores about a half million bullion monthly. The company employ about 800 men. The mine has three entrances—the lower, the middle, and the upper tunnels. At the mouth of the middle tunnel, which is situated on South I street, large and extensive quartz houses have been erected. A. Lawton, President; Chas. Bonner, General Superintendent.

MEXICAN MINE, situated between Howard and A streets, was erected in 1863, has a 25-horse power engine, and the company own 100 feet on the Comstock lode. Alsopp & Co., Proprietors; E. B. Darsey, Superintendent.

MARIPOSA QUARTZ MILL, located at the foot of Cedar Hill; it has a 15-horse power engine, running 12 stamps of 600 pounds each. Knox's pans and the Hungarian bowls are used in the amalgamating department. Cost of mill about \$20,000.

HOOSIER STATE MILL, situated on Silver, between G and H streets, was erected in 1862—engine 40-horse power. The machinery was formerly used in the old Spanish Mill, runs 8 stamps, and 24 Knox's pans—was erected in 1862. Jacob Clark & Geo. Hurst, Proprietors; J. Clark, Superintendent.

CEDAR HILL MILL, located in Cedar Ravine, has a 40-horse power engine, built at the Pacific Foundry, San Francisco, three straight batteries of four stamps each; crushes 16 tons of rock per day; it has 12 6-foot amalgamating tubs, with 8 Knox's improved pans. The mill was erected at a cost of \$35,000.

EMPIRE STATE MILL, situate at what is known as Sugar Loaf Peak, is run by both water and steam. The water wheel is 40 feet in diameter, with a 15 horse power engine; runs 10 stamps, and crushes about 12 tons of rock per day. It uses Knox's pans, with false bottoms, and Wakelee's patent flue pans; employs 10 men. Chas. Coover & L. Dunn, Proprietors. L. Dunn, Sup't.

Dealers in Blank Books, Legal and Commercial Blauks.

ANNUAL REPORT
267800V

OF THE

STATE MINERALOGIST

OF THE

STATE OF NEVADA

FOR 1866.

CARSON CITY:
JOSEPH E. ECKLEY, STATE PRINTER.



List of Mills in Nevada.

NAME.	Motive Power.	Cords of Wood per Day.	No. of Stamps.	Weight of Stamps.	No. of Pans.	Nature of Pans.	Crushing Capacity per Day, Tons.	REMARKS.
STOREY COUNTY.								
Atlas.....	steam	4 1/2	15	600	8	Hepburn	25	
Atwood.....	"	4 1/2	16		26-2	Knox, Wheeler	20	
Bay State.....	"	4	23		14	Wheeler	35	
Bower's.....	"	4	20	10-600 10-700	30	Knox	25	
Central.....	"	8	13		4	Hepburn	12	
Crown Point.....	"	5	8	500	8	Knox	8	
Comet.....	"	4 1/2	16			Plain	20	
Douglas.....	"	4	10	650	26	Hepburn	16	
Eclipse.....	"	4	15		8	Wheeler	30	
Empire, No. 1.....	"	5 1/2	21	650	29	Knox, Wheeler, Hepburn	15	
Empire, No. 2.....	"	8	16	650	24	Knox	17	
Empire State.....	"	5	15		20-2-2	Hepburn, Varney	100	Refitting.
Gold Hill.....	"	3	14	8-600 6-750	24	Knox	13	
Granite.....	"	20	80		39-3	Knox	30	
Gould & Curry.....	"	3 1/2	8	750	24	Wheeler	15	
Hoosier State.....	"	6	44	600	74	Plain	18	
Imperial.....	"	5 1/2	20		10	Wheeler	20	
Land's.....	"	4	12		2-6	Knox, Wheeler	20	
Mariposa.....	"	5	9		30	Wheeler	50	
Marysville.....	"	6	22		12	Wheeler	26	
Ogden.....	"	8	30	650	15	Knox	20	
Pacific.....	"	3 1/2	16	700	18	Hepburn	40	
Petaluma.....	"	5 1/2	20	650	12-8	Knox, Hepburn	12	
Piute.....	"	8	25	650	5	Varney	12	
Rhode Island.....	"	4	10		56	Knox	28	
Rigby's.....	"	3 1/2	8		8	Tubs, Wheeler, Hepburn	25	
Rogers'.....	"	5	16	750	10	Knox	10	
Sapphire.....	"	5	16				26	
Simcoe.....	"	2 1/2	8	500				
Stevenson's.....	"	6	20					
Seccor.....	"							

Summit.....	"	6	20	625	11-1	Wheeler, Varney	35	
Union.....	"	2 1/2	14	10-650 4-500	14	Hepburn	14	
Winfield.....	"	5	18		8	Hepburn	30	
LYON COUNTY.								
Birdsall & Carpenter...	water	2	30	650	20	Wheeler	55	
Bacon.....	steam	6	20	650	17	Wheeler	30	
Bartolo.....	"	3	8	550	8	Knox	9	
Cole & Co.....	"	3	5	480	4	Wheeler	8	
Devil's Gate.....	"	5	8	900	10	Hepburn	14	
Daney.....	"	6	15	550	15	Wooden Tubs	20	
Dayton, No. 1.....	water	1	20	500	6	Wheeler	15	
Dayton, No. 2.....	steam	6	15	800	8	Varney	15	
Eagle.....	water		5	400	2	Knox	15	
Eastern Slope.....	steam	5 1/2	16	800	6	Hepburn	20	
Excelsior.....	"	3	10	650	18	Knox	18	
Eureka.....	water		20	650	8	Wheeler	22	
Franklin.....	"	4	10	600	8	Knox	12	
Golden Eagle.....	steam	3 1/2	10	850	25	Tubs	18	
Illinois.....	"	5	20	400	5	Hepburn	20	
Island.....	"	2	19	650	11	Tubs	14	
Lindauer & Co.....	st'm & water	2 1/2	15	480	10	Wheeler	20	
Metallurgical Works...	steam	5	15	700	6	Wheeler	16	
Monitor.....	water		5	450	2	Wheeler	3	
New York & Nevada.....	steam	5 1/2	20	550	17	Hepburn	25	
Ophir.....	st'm & water	2 1/2	24	600	15	Hepburn	35	
Pioneer.....	steam	6	15	700	15	Tubs and Wheeler	20	
Phoenix, No. 1.....	"	6	15	650	8	Tubs and Wheeler	19	
Phoenix, No. 2.....	"	7	20	534	24	Tubs	28	
Palmyra.....	"	4 1/2	10	650	12	Tubs	15	
Rock Point.....	st'm & water	2 1/2	56	550	50	Tubs and 6 Hepburn	60	
Sparrow & Trench.....	steam	6	20	600	19	Tubs	25	
Sherman & Co.....	water		5	400	2		4	
Swansea.....	steam	5	14	900	22	Tubs	20	
Smith, D. L.....	water		5	450	4	Tubs	4	
Sacramento.....	steam	5	12	750	12	Tubs	18	
San Francisco.....	st'm & water	3	10	650	7	4 Tubs and Wheeler	14	
Weston & Co.....	steam	4	15	550	9	Wheeler	14	
Weston & Co.....	water		10	450	8	Tubs	11	

Dismantled.

One of these Mills destroyed by fire during 1866.

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BIENNIAL REPORT
OF THE
STATE MINERALOGIST
OF THE
STATE OF NEVADA,
FOR
THE YEARS 1871 AND 1872.

12760

MILLS.

I am indebted to Mr. Samuel Doake, of Virginia City, who has kindly prepared the following tabular statement of the mills in Storey County:

Name of Mill.	No. of Stamps.	No. tons per day.	Location.	Crushing Ore, from.
Boston	5	.....	Gold Cañon.....	..... Empire, Gold Hill
Ione	5	15	Gold Cañon.....	..... Crown Point Croppings
Succor	15	25	Gold Cañon.....	..... Idle
Ramsdale	2	5	Gold Cañon.....	..... Woodside
Pacific	30	70	Gold Cañon.....	..... Belcher
Pappoose.....	5	14	Gold Cañon.....	..... Gold Hill Croppings
Piute	20	50	Lower Gold Hill.....	..... Idle
Douglas	15	30	Lower Gold Hill.....	..... Empire, Gold Hill
Atlas.....	15	45	Lower Gold Hill.....	..... Savage
Petaluma	24	75	Lower Gold Hill.....	..... Crown Point
Sapphire.....	15	40	Lower Gold Hill.....	..... Crown Point
Rhode Island.....	25	50	Lower Gold Hill.....	..... Crown Point
Gold Hill Quartz.....	8	18	Lower Gold Hill.....	..... Idle, out of wood
Sunderland.....	10	25	Lower Gold Hill.....	..... Belcher
Hoosier State.....	18	40	Virginia .....	..... Savage
Sierra Nevada.....	20	50	Virginia .....	..... Sierra Nevada
Evans.....	5	13	7-Mile Cañon .....	..... Savage
Mariposa.....	12	30	7-Mile Cañon .....	..... Hale & Norcross
Sacramento & Meredith.....	20	50	Cedar Hill .....	..... Idle
Winfield.....	20	50	7-Mile Cañon .....	..... Chollar
Atlantic.....	12	30	7-Mile Cañon .....	..... Idle
Landy.....	20	50	7-Mile Cañon .....	..... Chollar
De Lands	15	35	6-Mile Cañon .....	..... Idle
Nevada.....	20	50	Virginia .....	..... Chollar
Empire State.....	15	40	6-Mile Cañon .....	..... Idle
Park & Bowie, No. 1.....	.....	.....	6-Mile Cañon .....	..... Tailing Mill
Park & Bowie, No. 2.....	.....	.....	6-Mile Cañon .....	..... Tailing Mill
Occidental.....	20	50	Silver Star Dist.....	..... Tailing Mill
Lady Brynn.....	10	.....	6-Mile Cañon.....	..... Idle
Total, 29 mills.....	399	1,001		

WASHOE COUNTY.

This county is north of Ormsby. It takes its name from a tribe of Indians who inhabit the western portion of the State. A few mining districts have been organized within its boundaries, at different times, but none of them have ever been a source of much profit. The wealth of this county consists chiefly in its agricultural resources and timber lands. Formerly, the streams of water flowing from the cañons in the Sierras into Washoe Valley were made available for milling purposes, in reducing the ores from the Comstock; and at one time no less than ten mills, having an aggregate of two hundred and eighty-one stamps, were in active operation in this county—some of these, moreover, were of the largest size, and first-class in all their appliances. The Ophir Company's Mill, of seventy stamps capacity, and built at a cost of a half million dollars, and Dall's Mill at Franktown, having sixty stamps, were among

the first mills in the State. Since the completion of the Truckee Railroad, however, ore can be delivered so much cheaper to the mills on the Carson River, that with the exception of the Truckee Mill, near Reno, and one or two tailing mills in Washoe Valley, nearly all these mills have been dismantled and abandoned.

RENO

Is the county seat, and is situated on the line of the Central Pacific Railroad. From this point all supplies used in the southwestern section of the State are forwarded, as well as to Douglas, Ormsby, Lyon, and Storey Counties. It is pleasantly located on the banks of the Truckee River, and has many natural advantages for maintaining itself as a prosperous town.

WADSWORTH

Is situated thirty-five miles further east, on the line of the railroad. There are located here the repair and machine shops for the Truckee division of the Central Pacific Railroad. From this point freight is shipped to Belmont, Ellsworth, and Columbus; and all the soda and borax obtained in Churchill and Esmeralda Counties are forwarded to this place for shipment to the markets.

WASHOE CITY.

Formerly the county seat, Ophir, and Franktown, since the decline of milling enterprises in this county, are not so flourishing as they were some years ago.

The following interesting description of the agricultural and other resources of this county has been condensed from the columns of the *Nevada State Journal*, a well edited weekly newspaper published at Reno:

It may be said that Washoe County embraces an area of one thousand five hundred square miles and that of this extent not less than from eight hundred to one thousand square miles will ultimately be found valuable for agricultural and grazing purposes. We think we are speaking within proper bounds of truth, for, in fact, it is difficult to say what noticeable portion of the entire county is not to a greater or less extent fit for grazing. Of the fine arable land (by which we mean land so situated, of proper richness, that crops may be raised by irrigation) we think that there are between three hundred and four hundred square miles. Notwithstanding the rather extensive reclamation and cultivation of lands in Washoe Valley and Truckee Meadows, we do not believe that one fourth of our arable lands have been yet tested to anything like their reasonable capacity for farming operations. The surface of the county alternates in mountain range, valley, hill, and lake. The eastern range of the Sierra Nevada Mountains were ten years ago clothed from valley to summit with forests of excellent pine timber. Since then, great inroads have been made among these fine trees for the procuring of lumber, mining timber, and wood, but enough yet remains in the southwestern portion of the county to form an extensive source of supply for the same purposes, and all accessible to labor and capital. The extreme southwest corner of the county is found within the limits of the remarkable and beautiful Lake Tahoe,

The Southern Pacific railroad is now completed to a point 37 2-10 miles east of Indian Wells. The work has been pushed forward with great energy.

MINING AND

SCIENTIFIC PRESS

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO.,
Patent Solicitors.

SAN FRANCISCO, SATURDAY, FEBRUARY 10, 1877.

VOLUME XXIV.
Number 6.

Comstock Papers.—No. 16.

Pan Amalgamation, and What It Led To.

The trial of pan amalgamation having proved a success, demonstrating the facility and cheapness with which the Comstock ores could be worked, confidence in the value of the mines was greatly increased, and many parties were encouraged to put up reduction works who would not otherwise have gone into the business. The popular idea that a vast deal of science, or at least much practical skill, was indispensable in the treatment of argentiferous ores having been thus partially dissipated, the California millmen were quite certain that they could deal with them successfully when a method so similar to that employed in reducing the gold-bearing quartz of this State would answer the purpose. Accordingly a good many of this class repaired to Washoe during the summer and fall of 1860, with a view to putting up mills and running them on this new school of ores. The arrastras that had been set up the year before were designed merely for working the quartz found at Gold Hill, in which the most of the gold was free and easily separated, no effort having been made to save the silver which it contained; the miners not then suspecting, in fact, that it carried any of this metal. When the sulphurated silver ores of the Comstock proper came to be handled, this style of apparatus was found to be wholly inadequate; hence early recourse to more effectual methods became necessary.

Era of Active Mill Construction

The completion in August, 1860, and the successful operations of the Paul and the Coover mills, was immediately followed by the inauguration of numerous other enterprises of this kind, several having, in reality, been planned prior to the above date and in anticipation of the success that was expected would attend these pioneer establishments. No rapidly, indeed, did this business of mill construction thereafter proceed, that no less than 86 works of this description, carrying a total of 1,200 stamps, and costing an aggregate of over six million dollars, had been finished and started up by the end of 1861, some 40 or 50 arrastras and several patio yards built and set at work meantime, not being included in this estimate. Work upon a good many other mills had also been commenced before the end of that year, the most of which were completed early in 1862, when the era of most active mill construction terminated in so far as the Comstock mines were concerned, this industry having for the next three or four years, been transferred to Esmeralda, Reese river, Pine Grove, Humboldt, and other interior districts.

Location, Cost and Capacity.

Of the mills built for reducing the Comstock ores eight, carrying 114 stamps and costing \$200,000, were located in Ormsby county; six, carrying 108 stamps, and costing \$1,200,000, were located in Washoe county; forty, carrying 573 stamps, and costing in the aggregate \$3,700,000, were located in Storey county; twenty-two, carrying 360 stamps, and costing \$1,000,000, were located in Lyon county, and ten, carrying 84, and costing \$300,000, were located in Esmeralda county, there having been erected, up to the end of 1861, not more than two or three small establishments of this kind in any other portion of Nevada Territory.

The First Parties to Put Up Water-Driven Machinery.

East of the Sierra, for the purpose of ore reduction, were Judge James Walsh and his partner, Joseph Woodworth, who, on their first visit to Washoe, in the latter part of June, 1860, threw a slight dam across the Carson river, at a point about one mile above the present town of Dayton, then Chinatown, and, diverting the water into a side race, employed it for propelling a couple of arrastras, which they constructed and put up there for testing the Gold Hill ores, they having bought from Comstock a small claim at that point before purchasing the silver bearing deposit a mile further north, and which afterwards constituted the site of the great Washoe discovery. The water right so secured on the river was, the

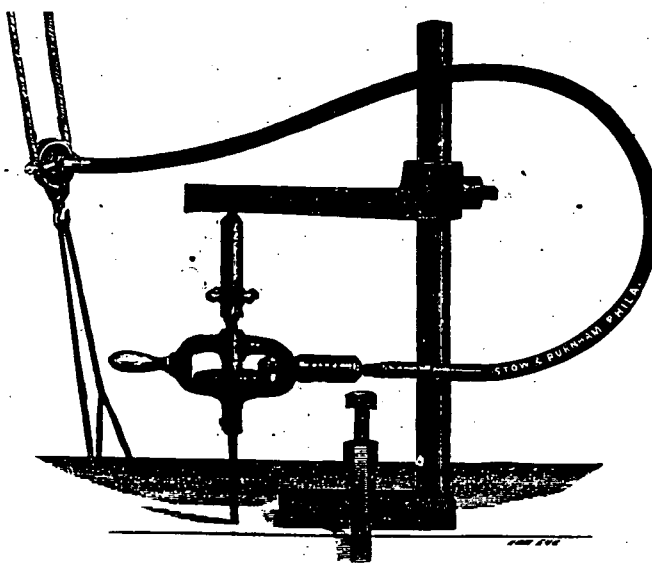
next year, further utilized by the construction there of additional arrastras and, finally, by the erection of extensive reduction works, this now being the site of the present Ophir company's large and efficient mill.

Besides Paul, Coover and Harris, the following parties commenced the erection of mills, and, in some cases, completed and had them running before the end of 1860: Richard Ogden and J. Downes Wilson, who, in November, 1860, finished the Ogden & Wilson mill, the first one completed in the Virginia City district; Henry G. Biasedel, Alphens Staples, Israel W. Knox, who built the Olive Branch mill, Flowery district; McNulty, who built what was afterwards known as the Bacon mill; Peter Frothingham, who put up a small establishment on Carson river, four miles below Dayton; John B. Winters, connected with Woodworth & Moehlemer in the building of the Carson River mill; John Atchison, Logan and Holmes, whose works were also on Carson river; Treach & Sparrow; De Land, Eclipse mill; and various other persons, whose names we cannot now recall to memory. Among the mills that were begun this year and completed near the end of it or early in 1861, was that of the Spanish

Flexible Power Transmitter.

This is a very simple and useful device, as the accompanying illustration will show. It is the first successful application of a flexible shaft for general purposes of transmission of power. The *Polytechnic Review*, during the late exhibition, thus described this piece of mechanism: Passing along the north avenue of machinery hall, our attention was attracted to what appeared to be a section of inch leather hose, with a revolving twist drill for a nozzle, the hose lying quietly on the floor and the drill or nozzle making a clean, smooth hole through a chilled cast wheel already perforated several times by the same means.

Following the "hose" backward and around a corner it was seen to terminate in the arbor of a rapidly revolving grooved pulley fastened temporarily to the floor and driven by a braided round leather belt, which after several corner turnings is seen to be driven by a grooved pulley high overhead. The mystery was explained.



THE STOW FLEXIBLE POWER TRANSMITTER.

The "hose" was the sheath of what is termed a "flexible power transmitter"—a closely laid cable of steel wire which accommodates itself to any flexure, while transmitting unabated the rotation communicated to it (in the direction of its spiral) at the end. This cable has a high torsional but a low bending resistance. The drill may be thrown in and out of gear in an instant. The power transmitted may be carried around, under or over any obstacle; and by it may be applied, to any angle, a twist or rabbit drill, a tap, die, diamond drill, wood auger, carving and polishing tool, horse clipper, or any other implement requiring rotation and rapid and easy adjustment.

Carried under a heavy casting, or into the manhole of a boiler, or wherever boring, drilling, polishing, etc., is required, the application and guidance by hand is all that is needed. Few more simple and convenient devices have been presented to notice, and each day new applications are presented. Cloth shearing and cutting and the cutting of fine tubes are easily effected by its means. The patentee is Nelson Stow, and the manufacturers are Stow & Burnham, No. 500 North Fifteenth street, Philadelphia.

A CALL has been issued for a meeting of the National Teachers' Association, to be held in Washington on the 1st, 2d and 3d of March. Subjects of interest to the cause of education have been arranged for discussion.

One hundred and three deaths from small-pox were reported in London last week, the largest number during the present epidemic, except in the first week of January.

Whip-Making and the Effects of Steady Employment.

Simple as it appears, a first-class linen-plaited whalebone whip is constructed in an exceedingly interesting and ingenious manner, and it requires careful and honest management to uniformly produce a perfect and durable article. The stock for manufacturing must be judiciously chosen and the liquid or sticking material correctly compounded and applied in proper condition. The American Whip Company, of Westfield, Mass., well known in the trade in all American cities, is undoubtedly the largest factory in the world. Is no other establishment is so large a variety of whips made in such perfection and great numbers.

Thirty years ago, says Mr. H. J. Bush (one of the leading founders of this company), a knife and plane were all the tools employed by a journeyman whip-maker. Now, we should judge that \$50,000 would not pay for the improved tools and machinery in this single establishment. The most ingenious in construction and operation is the plaiting machinery with its dozens of wheels revolving and carrying different strands of thread in an endless number of different ways, rapidly forming perfect fitting braids to the varying surfaces of the whipstock. One of the latest invented machines plait the buttons on the stocks more evenly than, and as perfect as, the human hand.

The American Whip Company occupy a large four-story brick building, employing from 40 to 50 men when in full operation. One hundred and fifty dozen or about 2,000 whips can be turned out daily. Although the largest, this factory is only one of many equally well-deserving factories in the vicinity.

Westfield, for more than a quarter of a century, has been noted as being headquarters for whip and cigar-making in the United States. During the past 10 years the town has, from appearances, doubled in wealth if not in population. The braiding of horsehide and buckskin lashes, snaps, and the working of buttons, etc., on whips taken into the industrious homes of the villagers, has given the town a thriftiness rarely enjoyed of late years by their neighbors in other parts of New England. This exemplifies the great benefit to any community of having some light employment for women and children. Although the remuneration may be very low, such employment tells largely in its general results. Some such employment universal in California would produce a wonderful change in the happiness and prosperity of our people.

THE Centennial mine, Nevada county, has paid its first dividend, aggregating \$3,000. The *Foot-hill Tidings* says of the mine: When it is remembered that the Centennial is a new mine—that only a few months ago the locators of the mine were going round town soliciting parties to take a little stock in it at nominal or "bed-rock" rates, "just to help it on its feet you know,"—and that it has paid its expenses from the word go, and pays now divided number one, amounting to more than the whole mine was held at a few months ago, we have a realization of why people will continue to put money into these legitimate mining enterprises, even though they do not all pan out as soon and as well as the Centennial. Some of them do and the average will turn out as well as most commercial ventures, if only good judgment followed by good management, go with the investment.

A USEFUL DEVICE.—We received a curious little arrangement this week from C. H. Barrows, of Willimantic, Connecticut. It is a device to place on the edge of a cup to keep the mouthpiece out of the tea or coffee, and is much better than the ordinary mouthpiece cap. It is self-adjustable, and by means of spring clamps will fit any cup, tumbler, mug or bowl, and is really a useful thing for mouthedashed gentlemen. It may be carried in the vest pocket, being made of very thin metal, nickel plated. The invention is a new one, and is just being introduced for sale.

For the Month of June, 1877.

#	QTY
120000	210'
48365	80'
12550	212'
10000	175'
2840	80'
195X1A	340'

A-6

A005023

14
NEVADA:

THE



LAND OF SILVER.

BY

JOHN J. POWELL,

AUTHOR OF

"The Golden State and its Resources."

SAN FRANCISCO:

BACON & COMPANY, BOOK AND JOB PRINTERS,

Corner Clay and Sansome Streets.

1876.

STOREY COUNTY.

NAME.	LOCATION.	MOTIVE.	STAMPS.	Tons
Boston	Gold Cañon ...	Steam	5	5
Ione	"	"	5	15
Succor	"	"	15	25
Ramsdale	"	"	2	6
Pacific	"	"	30	70
Pappoose	"	"	5	14
Piute	Lower Gold Hill	"	20	50
Douglas	"	"	15	30
Atlas	"	"	15	45
Petaluma	"	"	24	75
Sapphire	"	"	15	40
Rhode Island	"	"	25	50
Gold Hill Quartz	"	"	8	18
Sunderland	"	"	10	25
Hoosier State	Virginia	"	18	40
Sierra Nevada	"	"	20	50
Evans	Seven-mile Cañ.	"	5	13
Mariposa	"	"	12	30
Sacramento & Meredith	Cedar Hill	"	20	50
Winfield	Seven-mile Cañ.	"	20	50
Atlantic	"	"	12	30
Landy	"	"	20	50
De Lands	Six-mile Cañon.	"	15	35
Nevada	Virginia	"	20	50
Empire State	Six-mile Cañon.	"	15	40
Park & Bowie No. 1 ..	"	"	..	..
Park & Bowie No. 2 ..	"	"	..	..
Occidental	Silver Star Dist.	"	20	50
Lady Bryan	Six-mile Cañon.	"	10	..

PACIFIC
MILL & MINING.
COMPANY.

Schedule of Property

(Real Estate, Mills, &c.)

owned by

Pacific Mill & Mining Company.

1876.

*(For Certificate of Incorporation of Pacific Mill
and Mining Company, and Certified List of its Officers,
See Pages 170 + 176).*

AO10648

Lease
for
10 years.

Va. & Truckee R. R. Co.

^{to}
Pacific Mill & Mfg Co.

(Dec. 31, 1875)

Parcel of Land - in Storey Co. - State of Nevada -
described as follows:

Parcel of Land
in Seven Mile
Cañon - 2nd
Right of Way
for Tailing
Flumes from
Cul-Pan Mill
about
24½ acres

Beginning on the northern boundary of the Gould & Curry Tract of Land, so called, at a point which bears North $15\frac{1}{2}^{\circ}$ West 3 chains distant from the N.W. corner of the Monte Christo Claim, so called, being U.S. Survey of Claim numbered 76 in Township 17, North of Range numbered 21 East, Monte Diablo Base and Meridian, and running thence along the north line of said Gould & Curry Tract of Land, North $62\frac{1}{2}^{\circ}$ East 4 chains - to the West side of the Ravine, also South $15\frac{1}{2}^{\circ}$ East 3 chains to the N.W. corner of said U.S. Survey numbered 76, and following the West line of said Survey numbered 76, - South $15\frac{1}{2}^{\circ}$ East a further distance of 29 chains - thence North 78° East, on a line parallel with the north line of Bowie's fence and 100 feet northerly therefrom, 10 chains to the Ravine, thence following the West side of the Seven Mile Cañon Ravine, Northwesterly, until it intersects the before mentioned northern boundary line of said Gould & Curry Tract of Land; True bearings, Magnetic Variation $16\frac{1}{2}^{\circ}$ East.

Together with a right of way thence, from a point at or near the Pan Mill, so called, of the Pacific Mill & Mfg Co. - over, in, through, and across any and all other lands of Va. & T. R. R. Co. - by any route to be selected by said Pacific Mill & Mfg Co., for the purpose, of reasonable width, with the right to erect and maintain in, on, over, along and across said right of way any and all ditches, flumes,

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aqueducts, or other thing or means of transportation for carrying, conducting, or transporting from, at or near, said Pan Mill or elsewhere, to the premises above particularly described, any and all slimes, tailings, or other matter or things which said Pacific Mill & M. Co. may desire to carry, conduct, or transport as aforesaid.

Agreement, in
reference to the
above lease.

Pacific Mill & M. Co.

with

Va. & Truckee R. R. Co.

(Dec. 31, 1875.)

The Va. & Truckee R. R. Co. shall have the right, when voluntarily allowed by the Pacific Mill & M. Co., to pass below said leased premises, to take up and collect all said tailings and slimes at any point between the lower line of said premises and above a point 1200 feet below the Express Mill, so called, and use them between said points for the purpose of extracting the metals therefrom as its (said R. R. Co's) own & for its own benefit & advantage; and shall have the right to join on to any sluices or reservoirs of the Pacific Mill & M. Co. at the point where the slimes and tailings shall be by the Pacific Mill & M. Co., voluntarily allowed to pass below the premises aforesaid.

Provided, that the Pacific Mill & M. Co. shall have the right to reclaim as its own all such tailings and slimes so soon as they shall have passed to a point

below said point 1200 feet below said Express Mill, in whatever form the same may pass or be.

It is further agreed that in case the Pacific Mill & M. Co. shall desire to sell the slimes and tailings collected upon said leased premises, it shall receive bids therefor, and that, in case the bid of the Va. & T. R. R. Co. shall exceed or be equal to the bid of any other person for the purchase of the same, the Pacific Mill & M. Co. will sell the same to the Va. & T. R. R. Co. at the price so bid by the Va. & T. R. R. Co. —

The Va. & T. R. R. Co. shall also have the right to maintain and use in its present size & capacity the ditch running from the (Winfield Mill), so called, to and across said leased premises; or if said Pacific Mill & M. Co. shall so elect, another one, to be furnished by said Pacific Mill & M. Co., of equal capacity and of equal advantage to said Va. & T. R. R. Co. —

Va. & Truckee R. R. Co.

to

Pacific Mill & Mfg Co.

(May 3, 1876)

Lease
forTen (10) years
with privilege
of 10 years
more. —Parcel of land
in Seven Mile
Cañon - Storey
County - State
of Nevada.
- containing
about 7 acres.

Beginning at a point in line with the north fence of Bowie's yard, from which the N.E. Cor. of said fence bears S. 78° W. distant 18 links: thence running

1st Course - S. 18° E. - 8 chs. & 74 links to a Stone Wall on the North side of "Six Mile Cañon" - thence, following said Stone Wall - 2nd Course - N. 63° E. 1 ch. & 38 links - thence - 3rd Course - East - 1 ch. & 40 links to the end of said wall - thence, following the Water Course of said "Six Mile Cañon" - 4th Course - S. 84° E. 2 chs. & 10 links - to the confluence of said "Six Mile Cañon" and "Seven Mile Cañon" - thence 5th Course - S. $61\frac{1}{2}^{\circ}$ E. 2 chs. & 30 links to a Stone Wall - thence 6th Course - N. 34° E. 30 links - thence 7th Course - N. $53\frac{1}{2}^{\circ}$ W. 3 chs. & 50 links, crossing "Seven Mile Cañon" at 3 chains - thence 8th Course - N. $9\frac{1}{2}^{\circ}$ W. 4 chs. & 50 links - at 2 chs. & 16 links is the S. E. corner of the old Gould & Henry Mill foundation - and from there - to the end of the 8th Course, following East face of Stone Wall - thence 9th Course, following the windings of said "Seven Mile Cañon" to the beginning of the 10th Course - N. $38\frac{1}{2}^{\circ}$ W. 5 chs. & 50 links - thence - 10th Course - S. 78° W. 8 chs. & 10 links to the West line of U. S. Government Survey No. 76 - at 3 chs. Quarter Section Corner on West line of Section No. 27 in Township No. 17, North of Range No. 21 East - Monte Diablo Base and Meridian bears S. 70° E. distant 3 chs. & 61 links - thence 11th Course - on West line of said U. S. S. Survey No. 76 - S. $15\frac{1}{2}^{\circ}$ E. 1 ch. & 51 links - and thence - 12th Course - N. 78° E. 5 chs. & 15 links to the place of beginning. - Survey by true bearing, with Mag. Var. of $16\frac{1}{2}^{\circ}$ East. -

To hold said premises for the term of 10 years from the date hereof - with the privilege of 10 years more on application &c.

The Pacific Mill & Mfg Co. to pay all taxes which may be lawfully assessed upon the premises.

AD10661

STATISTICS
OF
MINES AND MINING

IN THE STATES AND TERRITORIES
WEST OF THE ROCKY MOUNTAINS,

FOR THE YEAR 1870.

BY ROSSITER W. RAYMOND,
UNITED STATES COMMISSIONER OF MINING STATISTICS.

LIBRARY.
COLORADO SCHOOL OF MINES
GOLDEN, COLORADO

WASHINGTON:
GOVERNMENT PRINTING OFFICE,
1872.

A0210-0

to the cam-shafts; and counter-shafting and belting perform the same office for the pans and rock-breaker. The pans are usually driven by separate pulleys, arranged on an auxiliary line-shaft, under the row of pans, which receives its power from the main shaft. The power required for each stamp of ordinary or average weight, with due allowance for friction, is about one and a half horse-power.* The power demanded for a pan is from three to six horse-power, according to its capacity. The expenditure of power per ton of ore crushed, ground, and amalgamated, judging by the relation existing between the power of the engines provided, and the work performed by the mills, is between one and a half and three horse-power, averaging, probably, about two, but varying according to the capacity and economy of the mill.

The quicksilver charged with amalgam is carefully cleaned by washing and skimming, and strained through a canvas filter, which retains the amalgam. When this straining is performed, not after every charge of ore, but at longer intervals, a considerable quantity of the fluid quicksilver solution of amalgam accumulates, and this is frequently returned to the pans, as its "charged" condition is thought to render it more active than pure metal in the amalgamating process.†

Pans and settlers are thoroughly cleaned at stated intervals, or on special occasions, all the iron work being carefully scraped with a knife to collect the adhering hard amalgam. In many cases one-fourth, or even a larger proportion of the total product of amalgam is obtained in this way.

Retorting and melting.—The amalgam, having been strained and forcibly pressed, to expel as far as practicable the fluid quicksilver, is then subjected to the process of sublimation in cast-iron retorts, from which the quicksilver, escaping and condensing in the exhaust-pipe, passes into a receiver, where it is collected under water, while the crude bullion remains behind.

The retort is usually cylindrical, about 12 inches in inside diameter, and 3 to 5 feet long, the casting being $1\frac{1}{2}$ inch thick. The front end is closed with a cover which is tightly fastened and luted with clay after the introduction of the charge. The opposite end is usually conoidal in form, contracting to a diameter of $2\frac{1}{2}$ inches where it connects with the exhaust-pipe, turning downward into the condenser. The retort is set in a brick furnace with suitable fire-place, dampers, and flues.

The amalgam is charged, sometimes in iron trays, sometimes directly upon the bottom of the retort, the iron surface in either case being previously covered with a thin wash of clay or battery-slime to prevent the adherence of the metals. Whiting, wood-ashes, and paper are recommended for this purpose, as less likely to choke the pores of the bullion.

The amalgam being charged, and the door properly closed and luted, heat is applied, at first gently and afterward with gradually increasing intensity. Too high initial heat is likely to fuse the surface of the bullion and prevent the escape of quicksilver from within. When quicksilver ceases to pass over into the receiver, the retort is gradually cooled and the bullion withdrawn. The charge for a cylinder of the dimensions above described is about 1,200 pounds, and the usual time of firing about eight hours. About one-sixth of the charge, or 200

* The horse-power developed by a 650-pound stamp, dropping $8\frac{1}{2}$ inches ($\frac{1}{2}$ feet)

75 times per minute, is $\frac{650 \times 17 \times 75}{24 \times 33,000} = 1.15$ horse-power. About 30 per cent. is added for friction in gearing and between cam and tappet, and for the power expended in revolving the stamp.—R. W. R.

† The strained mercury is also more or less "charged" with amalgam. Only after retorting is it free.—R. W. R.

pounds of crude bullion from 1,200 pounds of amalgam, is usually obtained from the retort, to be broken up, melted, and cast in ingots ready for market. The loss of weight in melting is between 2 and 3 per cent. The ingots are assayed, and their fineness, (in thousandths of gold and silver,) with their coin value in dollars and cents, is stamped upon them. The value of the ounce of bullion ready for market usually varies between \$1 75 and \$2; the gold representing about one-third and the silver about two-thirds of the whole amount.

Slimes and tailings.—The term "tailings" is applied to the sand or pulp leaving the settler or agitator. The term "slimes" generally applies to that portion of the ore which is crushed under the stamps to an impalpably fine condition, and usually passes out of the mill without being deposited in the tanks when the coarser sands are collected for pan treatment. That part of the tailings which by grinding in the pans has been reduced to a slimy condition is sometimes called "pan slimes," and thus distinguished from "battery slimes."*

The battery slimes are usually allowed to escape, or only caught in reservoirs below those of the tailings. The tailings are variously treated to extract the quicksilver and amalgam which they still retain. Concentrators, blanket-slucies, etc., are used for this purpose, or large reservoirs are constructed in which the tailings accumulate, and after months of exposure to the weather are worked over again with profit.

The ordinary result of the pan treatment is 65 to 75 per cent. of the assay value. The subsequent treatment of the tailings may increase it to 85 or 90 per cent., or even more.

The stream of water carrying the tailings out of the mill is usually passed over blanket-slucies, to save amalgam, mercury, and heavy particles of ore. These sluices or tables are shallow troughs about 20 inches wide, with sides an inch or two high, and of indefinite length. A number are usually placed side by side—sometimes two, three, or four, sometimes fifteen or twenty, with a fall of 6 to 12 inches in every 12 feet. They are covered with strips of coarse blanket about 2 feet wide, made for the purpose, and cut into lengths of 10 or 15 feet to facilitate removal and washing. As the stream of tailings runs over them they retain the heavier portions, while the poorer sand is washed away, the quantity of water being carefully regulated to produce this effect. An attendant usually sweeps the surface lightly with a broom, distributing the material and assisting the action of the water. The blankets are taken up at intervals usually of twelve hours and washed out in a tub of water. While the blankets of one table are washing, the stream is turned so as to run over the neighboring table or tables.†

In each of the principal cañons below Virginia City are continuous series of blanket-slucies aggregating several miles in length. Some are owned by the mills, but generally they belong to contractors. According to the report of the surveyor general there were, in 1866, over 2,200 feet of blanket-slucies in Six-mile Cañon alone. Their cost is estimated at \$1 per foot, including blankets.‡

* The Comstock slimes are richer than the tailings, because they contain a larger proportion of rich sulphurets. For the same reason they are much more difficult of treatment, their fineness being unfavorable to concentration, and their mineralogical character to simple amalgamation.—R. W. R.

† The stream being constant, the advantage of having more than two tables side by side is evident. One extra table is required, and no more, whether the number in use be one or a dozen.—R. W. R.

‡ For the last two or three years the profits of the blanket-slucio owners have been declining by reason of the low grade of ore worked at the mills, and the greater economy of operations there rendering the tailings less valuable. Sudden freshets in the cañons have damaged this kind of property, and swept away accumulations of tailings.—R. W. R.

The concentrations washed from the blankets are worked in pans, and usually yield from \$18 or \$20 to \$30 per ton.

Treatment of tailings.—After passing the blanket-tables, or other concentrating apparatus, the tailings accumulate in reservoirs. The largest of these are on the plains near the mouths of the cañons. Thus two or three reservoirs at Dayton, near the mouth of Gold Hill Cañon, contain at present, perhaps, 400,000 tons of tailings; the Carson reservoir, receiving the stream from Six-mile Cañon, contains not less than 200,000 tons. A smaller reservoir two miles up the cañon was formerly estimated to contain 100,000 tons; but a large portion has been swept away by freshets. The assays of the slimy and richer parts* of the tailings may show a value \$25 or \$30 per ton, while the coarse sands vary in value from \$4 or \$5, to \$12 or \$15 per ton, according to the original character of the ore and the efficiency of the mill process to which it has been subjected. The contents of some of the smaller reservoirs about Dayton are said to have an average value of \$16 to \$18 per ton, though the larger reservoirs are probably less rich, a number of assays giving results varying from \$9 to \$13 per ton. The Carson reservoir has been tested by many assays, varying between \$7 50 and \$25, averaging about \$13 per ton.

Tailings are usually treated by raw amalgamation, a business which occupies a number of establishments. The largest of these is Birdsell's Mill, at Dayton, which was formerly a custom crushing-mill, with thirty stamps and twenty Wheeler pans. The stamps are not now required, and ten or fifteen large pans have been added, so that the mill can amalgamate 250 to 300 tons of tailings daily. The Carson River furnishes ample water-power.

Janin and Baldwin's Dayton Mill, also at Dayton, has five McCone pans, with a capacity of about 50 tons per day. It is driven by steam. Each pan works a charge of 4,000 or 5,000 pounds and four or five charges per day. Sulphate of copper and salt are supplied to the pans with each charge, of the former 3 to 6 pounds per ton, and of the latter 20 to 30 pounds—a large excess. The pans are covered and supplied with steam, maintaining a high temperature. The yield is thought to be about 60 per cent. of the assay value, which is said to average \$16 or \$18 per ton. From the accounts of this mill, it appears that during five months ending October 31, 1869, the quantity worked was 6,732 tons, of which the average yield was \$9 75 per ton. The total expense, including extraordinary repairs, (refitting mill and purchasing new pans,) was \$13,672, or \$6 48 per ton. The current ordinary expense appears to have been, per ton—

For labor	\$1 40
Quicksilver lost	95
Salt	68
Sulphate of copper	65
Fuel	1 20
Castings	12
	<hr/>
	5 00

* The quality of the tailings in a reservoir is frequently affected by the proportion of slimes retained with the tailings. The slimes remaining, by reason of their fineness, being suspended in water, may settle at the lower end of the reservoir, along the dam, or they may be carried over and either lost or caught in some other reservoir below. The current phenomenon is thus prevented of the removal by the stream of the very richest and the very poorest portions of the ore. But tailings containing a small proportion of slimes, though they assay higher in consequence, do not always yield more under the ordinary pan treatment—a circumstance which has ere now brought purchasers and contractors to grief.—R. W. R.

The mill employs seventeen men, viz: one foreman, five amalgamators, (three by day and two by night,) two engineers, one wood-passer, three teamsters, (bringing tailings from the reservoir,) and five shovelers, (loading teams and turning tailings over to dry.) The tailings here treated are somewhat richer than ordinary, and require more chemicals. Wood is also expensive here, costing \$10, and more, per cord. Tailings of lower grade, treated with less chemicals, more quickly, in mills of greater capacity, and with cheaper fuel, would require proportionately less outlay in running expense. Thus at Avery's tailing mills in Washoe Valley, where wood is \$6 per cord, the cost per ton is said to be but \$3 50.

Treatment of slimes.—All attempts to work slimes by raw amalgamation in pans (i. e., without previous roasting) were for a long time unsuccessful. This was attributed partly to the finely divided, clayey condition of the material, by reason of which the quicksilver and amalgam became coated with a slimy film, preventing amalgamation and causing great mechanical loss of mercury; partly also to the probable presence of the silver as sulphurets, as in the first-class ores, which require a chloridizing roasting to prepare them for amalgamation. Roasting being too expensive, under the circumstances, for slimes, this material has been either mixed with tailings, (or thrown back into the battery pulp,) and worked over in the pans, in which case it is impossible to say how much of its value has been extracted; or it has been allowed to run off with the common tailings, and be caught, sometimes in the great reservoirs at the cañon mouths, sometimes by special dams constructed for the purpose.*

Within a year or two past, however, slimes have been successfully treated in pans, without roasting, by a process which differs from the ordinary pan amalgamation of fresh ores or tailings, chiefly in the quantities of chemical reagents employed.† The mills of Messrs. Janin and Mr. I. S. Parke, in Six-mile Cañon, have reduced with profit, in this manner, large quantities of slimes.

In the Janin mill there are four McCone pans, receiving 2,500 pounds of slime at each charge.‡ Twelve pounds of the sulphate of copper and thirty-six pounds of salt are added with each charge, and the whole is worked for two hours before putting in the quicksilver. Little or no grinding is required, as the material is already exceedingly fine; the muller is raised high enough to avoid unnecessary friction, and revolved at the speed usual in working ore, the object being to keep up the circulation of the pulp. After two hours the quicksilver is added in large quantity, usually 300 pounds. The charge is then worked four hours longer, and afterward drawn off into the settler; when the amalgam is collected, while the residue is passed through large agitators, before finding its way to the tailing-stream, in order to save as much as possible of the escaping amalgam and quicksilver. The employment of so much quicksilver, together with the clayey nature of the slimes, causes a large loss of that metal, said to be about five pounds to the ton of

* It is unfortunate that the plan of saving slimes in reservoirs was not put in operation in the early days of Washoe mining, when this material was enormous in quantity and very rich. Millions of dollars were lost by this neglect, never to be recovered unless the Carson River may be made to "give up its dead."—R. W. R.

† Messrs. Louis and Henry Janin deserve the credit of solving this problem, both theoretically and practically. With characteristic intelligence and skill, they experimented in the direction indicated by scientific principles, and opened to the limited pan process a new realm of possible applications, the boundary of which is not yet determined.—R. W. R.

‡ The regular charge of ore would be 4,000 or 5,000 pounds; but slimes increase greatly in bulk on the addition of water.—R. W. R.